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METHOD OF DETERMINING RUBBING FRICTION TORQUE IN A MOTOR VEHICLE POWERTRAIN

Abstract of the Disclosure

A method of determining the rubbing friction torque involves characterizing fuel cutoff engine deceleration, and calculating the rubbing friction torque for any combination of engine speed and powertrain temperature is calculated in accordance with a base point rubbing friction torque RFT_{base} determined at a base powertrain temperature T_{base} and fuel cutoff characterization data. The calibration data characterizing fuel cutoff engine deceleration is obtained by alternately enabling and cutting off engine fuel delivery to cycle the engine speed between specified set points, and measuring and recording the engine deceleration during intervals of fuel cutoff. The rubbing friction torque RFT_{test} at a given test temperature T_{test} is calculated according to $RFT_{test} = (RFT_{base} + PFT_{base}) \times \frac{DECEL_{test}}{DECEL_{base}} - PFT_{test}$, where $DECEL_{test}$ and $DECEL_{base}$ are the fuel cutoff engine decelerations at the test and base points, respectively, and PFT_{test} and PFT_{base} are the pumping friction torques at the test and base points, respectively.